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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/021,673

12/12/2001

Vijay A. Deshpande

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10/01/2004

TEXS:08

EXAMINER

DOROSHENK, ALEXA A

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ART UNIT

PAPER NUMBER

1764

DATE MAILED: 10/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/021,673

Applicant(s)

DESHPANDE, VIJAY A.

Examiner

Alexa A. Doroshenk

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 13-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 25 and 27 is/are rejected.
- 7) ☒ Claim(s) 4-12, 26 and 28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 25 and 27 continue to be rejected under 35 U.S.C. 103(a) as being unpatentable over Towler et al. (6,299,994) in view of Frye et al. (3,928,178).

With respect to claim 1, Towler et al. discloses an apparatus for converting hydrocarbon into hydrogen gas for use in a fuel cell comprising a reforming stack (26) for use as a hydrogen generation system (col. 1, lines 6-10), wherein the reforming stack (26) includes a plurality of cylindrical vessels (24 and 28) stackable without connecting piping (see figure 1) between each vessel (24 and 28).

Towler et al. also discloses that in order to produce the hydrogen stream, impurities, such as sulfur, must be removed from the feedstock and that any conventional means for removing sulfur can be used (col. 8, lines 50-63). Towler et al. further discloses wherein one such sulfur removal means can be a multi-stage hydrodesulfurization treatment (col. 9, lines 7-17), but fails to state wherein this purification means is in the form of a stack.

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Frye et al. teaches a multi-stage (col. 1, lines 24-27) hydrocarbon hydrodesulfurization means (24) of a stacked formation (see figure 1). Frye et al. further discloses that this means provides optimal temperature control during operation

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(col. 2, lines 40-50) as well as having economic benefits (col. 4, lines 18-29). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the multi-bed hydrodesulfurization means of Frye et al. as the specific multi-stage hydrodesulfurization means required by Towler et al. as it is merely the selection of specific means known to the art as well as for the recognized economic advantages and temperature control.

With respect to claim 2, the specific hydrodesulfurization (purification) stack (24) of Frye et al., provided above, includes cylindrical vessels (26, 28, 30, 32, 34, 36, 38) stackable without piping connecting the vessels (see figure 1).

With respect to claim 3, Towler et al. illustrates wherein the reforming stack (26) is aligned vertically (see figure 1).

With respect to claims 25 and 27, Towler et al. discloses an apparatus for converting hydrocarbon into hydrogen gas for use in a fuel cell comprising a reforming stack (26) for use as a hydrogen generation system (col. 1, lines 6-10), wherein the reforming stack (26) includes a plurality of cylindrical units (24 and 28) stackable (see figure 1) and which perform separate operational functions (co. 17, lines 13-41).

Towler et al. also discloses that in order to produce the hydrogen stream, impurities, such as sulfur, must be removed from the feedstock and that any conventional means for removing sulfur can be used (col. 8, lines 50-63). Towler et al. further discloses wherein one such sulfur removal means can be a multi-stage hydrodesulfurization treatment (col. 9, lines 7-17), but fails to state wherein this purification means is in the form of a stack.

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Frye et al. teaches a multi-stage (col. 1, lines 24-27) hydrocarbon hydrodesulfurization means (24) of a stacked formation (see figure 1). Frye et al. further discloses that this means provides optimal temperature control during operation (col. 2, lines 40-50) as well as having economic benefits (col. 4, lines 18-29). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the multi-bed hydrodesulfurization means of Frye et al. as the specific multi-stage hydrodesulfurization means required by Towler et al. as it is merely the selection of specific means known to the art as well as for the recognized economic advantages and temperature control.

Towler et al. and Frye et al. are silent as to the cylindrical units being separable and modular. It is held that making an integral structure of a known device separable is an obvious variant of the device and is not the type of innovation for which a patent monopoly is to be granted. In this case one would be motivated to make the device separable for the obvious advantages of ease of replacement of the various units as well as to ease cleaning of the device. The mere fact that a given structure is integral does not preclude its consisting of various elements. Nerwin v. Erlichman, 168 USPQ 177, 179 (PTO Bd. of Int. 1969)

***Allowable Subject Matter***

3. Claims 4-12, 26 and 28 continue to be objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

4. Applicant's arguments filed July 12, 2004 have been fully considered but they are not persuasive.

**Rejection of Claim 1**

Applicant argues that Figure 1 of Towler discloses spaced apart packed sections (24 and 28) of a vessel (26) and therefore does not read on the cylindrical vessels which are "stackable without the need for connecting piping between each vessel".

The examiner respectfully disagrees with applicant. In order for zones 24 and 28 to be discrete individual zones as illustrated and disclosed, the catalytic material within these zones would have to be contained in some manner thereby forming it's own "vessel". The examiner also finds that the term "stackable" in the claim does not provide a structural distinction from the apparatus of Towler. "Stackable" does not equate with "stacked directly in contact with one another", rather the ability to be positioned as such. Towler does not disclose any required "connecting piping" between vessels 24 and 28 and it is held that one of ordinary skill in the art, absent a requirement of a connecting piping, would find vessels 24 and 28 to be stackable.

With further regard to applicant's arguments that elements 24 and 28 of Towler are shown in Figure 1 to be spaced apart thereby distinguishing them from being stackable or without piping connection, the examiner finds that Figure 2 of applicant's own disclosure also illustrates the same "spaced apart" schematic of elements 128, 102/104 and 136/138 as well as 132, 116 and 144. How can applicant argue that the

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elements 24 and 28 of Towler are shown to be spaced apart and therefor not stackable when applicant's own figures illustrate the same features?

Rejection of Claims 2 and 3

Applicant argues essentially the same arguments discussed above with respect to the reference illustrating vertically aligned catalyst beds with spacing between but in view of Frye. The examiner holds the same position as presented above.

Rejection of Claims 25 and 27

Applicant argues that the examiner has not provided evidence or a reference by which it would have been obvious to make the cylindrical units of Towler or Frye separable and modular.

In response to applicant's argument that there is no suggestion to modify the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or ***in the knowledge generally available to one of ordinary skill in the art***. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it is held that the knowledge to make an integral structure of a known device separable is knowledge which is generally available to one of ordinary skill in the art and this holding is supported by Nerwin-v. Erlichman, 168 USPQ 177, 179 (PTO Bd. of Int. 1969).

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In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

### ***Conclusion***

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

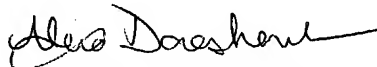
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexa A. Doroshenk whose telephone number is 571-272-1446. The examiner can normally be reached on Monday - Thursday from 9:00 AM - 7:30 PM.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Alexa A. Doroshenk  
Examiner  
Art Unit 1764